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TITLE: METHOD AND APPARATUS TO FORWARD A MULTIMEDIA MESSAGE

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METHOD AND APPARATUS TO FORWARD A MULTIMEDIA MESSAGE

[0001] This application claims priority from Korean Patent Application No. 77988/2002, the subject matter of which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0002] Embodiments of the present invention may relate to a multimedia messaging service (MMS). More specifically, embodiments of the present invention may relate to forwarding or handling a multimedia message.

2. Background of Related Art

[0003] A multimedia messaging service (MMS) is a service upgraded from a short message service (SMS). The MMS can send/receive not only character messages but also various multimedia data such as, but not limited to, moving pictures, music, graphic and pictures, etc. A rapid growth of MMS is expected throughout the world.

[0004] In order to forward a multimedia message, it is assumed there is a value added service provider (VASP) or a multimedia message received from a MMS user. That is, in order to forward a multimedia message, a multimedia message may be received from another MMS user.

[0005] When a multimedia message consists of image, text and sound, etc., a size of the multimedia message may be comparatively small. However, when a multimedia

message includes a moving picture such as MPEG-4 (motion picture experts group-4), h.263, etc., then a size of the multimedia message greatly increases. Accordingly, this involves a greater amount of radio resources/forwarding time.

SUMMARY OF THE INVENTION

[0006] Embodiments of the present invention may provide a method for forwarding or handling a multimedia message to reduce an amount of wasted radio resources. This may be accomplished by setting an index value in a multimedia message and forwarding the multimedia message from a MMS server to a MMS user agent based on the set index value.

[0007] Embodiments of the present invention may also provide a method for forwarding or handling a multimedia message so as to reduce a forwarding time between a MMS user agent and a MMS server. This may be accomplished by setting an index value in a multimedia message and forwarding the multimedia message based on the set index value.

[0008] Embodiments of the present invention may include transmitting header information of a multimedia message from a user agent to a server, and determining an index value of the transmitted header information.

[0009] Embodiments of the present invention may include receiving header information of a multimedia message, and determining how to communicate a multimedia message based on the received header information.

[0010] Embodiments of the present invention may also include a server having a receiving device to receive at least an index value of a multimedia message, a processor to select information to transmit based on the index value, and a transmitting device to transmit at least the selected information.

[0011] Additional advantages, objects, features and embodiments of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The accompanying drawings illustrate various arrangements and embodiments of the invention and together with the description serve to explain the principles of the invention. Arrangements and embodiments will be described in detail with reference to the following drawings in which like reference numerals refer to like elements and wherein:

[0013] Figure 1 is a flow chart illustrating a method of receiving a multimedia message according to one example arrangement;

[0014] Figure 2 is a flow chart illustrating a method of forwarding a multimedia message according to one example arrangement;

[0015] Figure 3 is a flow chart illustrating a method of receiving a multimedia message according to an example embodiment of the present invention; and

[0016] Figure 4 is a flow chart illustrating a method of forwarding a multimedia message according to an example embodiment of the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0017] Figure 1 is a flow chart illustrating a method of receiving (or handling) a multimedia message according to an example arrangement. Other arrangements are also possible.

[0018] A MMS server may receive a multimedia message from a MMS user agent (i.e., a transmitting side) as shown at block S11. The MMS may have a set storage period. The MMS server may store the received multimedia message in a multimedia message box (MMbox) of the MMS server as shown at block S12. The MMS server may transmit the received multimedia message to a MMS user agent in block S13. When the MMS user agent does not properly or fully receive the multimedia message due to radio failure (or other reason), the MMS user agent may inform the MMS server and the MMS user agent may receive the multimedia message at a later time. More specifically, the MMS server may store the multimedia message in the MMbox for a preset storage period in order to retransmit the multimedia message at a later time.

[0019] After the preset storage period has elapsed, the MMS server may automatically delete the stored multimedia message from the MMbox. This may help prevent the multimedia message from being stored twice.

[0020] Figure 2 is a flow chart illustrating a method of forwarding (or handling) a multimedia message according to an example arrangement. Other arrangements are also possible.

[0021] In order to forward a received multimedia message, the MMS user agent may insert an address and/or telephone number of a receiving side's MMS user agent into the multimedia message. The multimedia message including the set address and/or telephone number may be forwarded to the MMS server as shown in block S21. In forwarding the multimedia message, the MMS user agent forwards the whole multimedia message including the address and/or telephone number.

[0022] The MMS server may store the received multimedia message in the MMbox as shown in block S22. The MMS server may forward the received multimedia message to a receiving-side MMS server (including the MMS user agent) as shown in block S23.

[0023] In the above-described multimedia message forwarding method, the multimedia message is forwarded between the MMS user agent and the MMS server. More specifically, the MMS user agent forwards a whole multimedia message to the MMS server. This may waste time because the whole multimedia message is always transmitted from the MMS user agent to the MMS server.

[0024] Embodiments of the present invention will now be described with respect to Figures 3 and 4. Embodiments of the present invention may reduce the amount of wasted radio resources and forwarding time between a MMS user agent and a MMS

server. This may be accomplished by setting an index value in a multimedia message and forwarding the multimedia message based on the set index value.

[0025] Figure 3 is a flow chart illustrating a method of handling (or receiving/processing) a multimedia message according to an example embodiment of the present invention. Other operations, orders of operations and embodiments are also within the scope of the present invention.

[0026] A MMS server may receive a multimedia message as shown in block S31. The MMS server may set an index value in a header of the received multimedia message as shown in block S32. The MMS server may store the multimedia message (including the set index value) in an MMbox of the MMS server as shown in block S33. The MMS server may transmit the multimedia message (including the set index value) to a MMS user agent as shown in block S34.

[0027] The index value may be a predetermined bit and/or information area added to the multimedia message (or inserted within the multimedia message) in order to discriminate a pertinent multimedia message from other received multimedia messages. The index value may be provided in a header of the multimedia message. An index value may be set to a value other than '0' by the MMS server. A multimedia message having an index value of '0' may correspond to a first-sent multimedia message or to a multimedia message that has had its contents changed in the MMS user agent. Other values are also within the scope of the present invention.

[0028] Figure 4 is a flow chart illustrating a method of handling (or forwarding/processing) a multimedia message according to an example embodiment of

the present invention. Other operations, orders of operations and embodiments are also within the scope of the present invention.

[0029] Figure 4 shows operations of forwarding a multimedia message between a MMS user agent and a MMS server. The method may include transmitting header information of a multimedia message (to be transmitted) from the MMS user agent to the MMS server. The method may also include judging whether an index value of the transmitted header information is '0' or another value. When the index value is other than '0' (i.e., corresponding to no change), then a multimedia message having a same index value may be retrieved from a MMbox of the MMS server. A telephone number and/or address of a receiving side may be set in the retrieved multimedia message. The multimedia message, including the receiving side's telephone number or address, having the index value of '0', may be transmitted to a MMS user agent of the receiving side. When the MMS user agent changes the contents of the multimedia message (or it is the first-sent multimedia message), the MMS user agent sets the index value as '0' and forwards the whole multimedia message (having the index value of '0') to the MMS server.

[0030] A method of forwarding (or processing) a multimedia message (including a set index value) in accordance with an example embodiment of the present invention will now be described.

[0031] When the MMS user agent changes a multimedia message to be forwarded, the MMS user agent sets an index value in the multimedia message to '0'. The whole multimedia message (having the index value of '0') is forwarded to the MMS server. On

the other hand, when the MMS user agent does not change the multimedia message to be forwarded, the MMS user agent may only transmit header information of the multimedia message to the MMS server as shown in block S41.

[0032] The MMS server judges (or determines) whether an index value of the received multimedia message header is '0' as shown in block S42. When the index value is determined to not be '0', then the MMS server may retrieve a multimedia message having a same index value as shown in block S43. The MMS server may insert a telephone number and/or address of the receiving side in a header (or other part) of the multimedia message as shown in block S44. The MMS server may then forward the multimedia message (including the receiving side's telephone number and/or address) to a MMS user agent on the receiving side as shown in block S45.

[0033] On the other hand, when the index value is determined to be '0', then the MMS server may forward the multimedia message having the index value of '0' to the MMS user agent on the receiving side as shown in block S45.

[0034] As indicated above, the MMS server may include an MMbox to store multimedia messages as well as information relating to multimedia messages. A multimedia message storing period of the MMbox may be set by the MMS user agent on the transmitting side. Because of the possibility of a stored message being deleted when the multimedia message is forwarded, the MMS user agent may check the multimedia message storing period based on a point in which the received multimedia message was stored in the MMbox. For example, when the multimedia message storing period has

elapsed, the MMS user agent (or the MMS server) may change the index value to '0' of the multimedia message to be forwarded.

[0035] The MMS server may also include a processor to perform various operations discussed above. This may involve determining how to handle a multimedia message based on an index value in a header (of a multimedia message). For example, the processor may decide to forward a multimedia message as to obtain a stored multimedia message based on the index value. The MMS server may also include a transmitting device to transmit (or forward) information and a receiving device to receive information.

[0036] Embodiments of the present invention can reduce the wastage of radio resources between a MMS user agent and a MMS server by setting an index value in a multimedia message and forwarding the multimedia message based on the set index value.

[0037] Embodiments of the present invention may reduce a forwarding time between a MMS user agent and a MMS server by setting an index value in a multimedia message and forwarding the multimedia message based on the set index value.

[0038] The foregoing embodiments and advantages are merely exemplary and are not to be construed as limiting the present invention. The present teaching can be readily applied to other types of apparatuses and operations. The description of the present invention is intended to be illustrative, and not to limit the scope of the claims. Many alternatives, modifications, and variations will be apparent to those skilled in the art.